

**REPORT**  
**PERFORMANCE ANALYSIS, CONTINUING**  
**RECOMMENDATIONS, AND MAME COORDINATING STRATEGIC**  
**ACTION PLAN FOR 2001**  
**MONGOLIAN ASSOCIATION OF MEAT EXPORT (MAME)**  
**FOR**  
**INCREASING THE EXPORT OF LIVESTOCK PRODUCTS**  
**FROM MONGOLIA**



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## **INTRODUCTION**

The key to raising the levels of exporting of Mongolian livestock products and maximizing the benefits resides within the notion of increasing the “competitive advantage” of the livestock processing industry as promoted by the “Competitive Initiative” project. This means that eventual success lies in the ability of the industry firms to improve the ratio of **outputs** (*delivered livestock meat products to users/consumers*) to the **input** (*live animals*), or, in other words, to improve “productivity” of this product chain. This assignment has addressed productivity awareness in purchasing, assembling, feeding, slaughter, processing, storing, marketing, and distribution of livestock products. In general, our task has been to suggest and implement practical incremental progress (***real world solutions***) on the major impediments to increasing industry productivity. The project has addressed the issues in each category, has made advancement in some, and needs more time to make continuing progress in others. Our activities were to first understand that we needed to go from point A (where Mongolia was in June 99) to point Z (where we hope to get to sometime in the future). This, however, is a tedious process, as we must develop and execute each practical step (***real world solution***) to go from point A to B to C to D and so on.

This report will focus on three areas of concern:

1. The reporting of progress of the MAME action plan during the January to June 2000 period and the July to present period;
2. The visiting and interviewing of the livestock processing industry, the appropriate government ministries, and other interested parties for assessment of the current state-of-exporting issues; and
3. The identification and proposed recommendations for further action, as well as revising the last two six-month phases of the MAME 2001 coordinated action plan.

The goal of devising a Mongolian platform that can launch increased exports of livestock products has made substantial progress during the last ten months. To discuss, examine, and analyze the performance, we find it useful to divide the process of increasing export of livestock products into three separate discussion domains: the economically viable export product (commodity-type and value-added) domain; the export-marketing (both traditional and non-traditional target markets) domain; and the transportation-mode (animal delivery and product delivery) domain.

***The first domain to consider is the development of the most economically advantageous livestock products, which can be successfully exported.***

Economic history has demonstrated that the mere exporting of commodity-type products will not produce the desired backward-link of economic benefits to the local population and/or the livestock herder sector. In almost every case of comparative advantage commodity-type exporting in other less developed economies (LDC's), economic benefit is usually limited to a small number of individuals in the economy. To overcome this phenomenon, the justifiable course of action suggested by this author was to develop products from the value-chain and concentrate on exporting the higher valued products.

**MEAT VALUE CHAIN** = LIVESTOCK-→CARCASSES-→BONELESS-  
→FRESH/FROZEN MINCED BEEF-→TINNED MEATS-→SAUSAGE-  
→SMOKED SEMI-DRY SAUSAGE-→PRE-COOKED MINCED-→DRY MEAT  
SNACK FOODS-→ETC.

This is not to say that at the onset, exporting of live animals and dressed carcasses would produce a negative outcome, but rather that it would have limited economic consequence. It is understandable that concentration of expanding exports of carcasses and then boneless beef are a first step (**real world solution**) in the process of increased exports. However, concentration in producing value-added (i.e., boneless, fresh/frozen minced, tinned meats, sausage, smoked semi-dry sausage, pre-cooked minced, and dry meat snack foods, etc.) **must not be forgone** once pressure to export is relieved by traditional target nation commodity-type exporting.

The Ministry of Agriculture (Veterinary Services) plays a critical role in this domain. The official state of health of Mongolian livestock is a major ingredient to progress in expanding exports to non-traditional target nations. The animal health issue is a major impediment, further complicated since the recent incidence and outbreak of Hoof and Mouth within a limited region of Mongolian livestock production (Dornogovi Province) as well as the general high incidence of Brucellosis, and, to a lesser extent, Anthrax. Even Russian authorities have closed down acceptance (quarantined) product originating from livestock produced in that region until the end of 2000. However, the development of cooked and/or dried meat products for export can bypass some of these concerns.

The new government appears to be committed to a long-term program for improvement and monitoring animal health but is limited by lack of resources. In meetings with the author, the head of the department stated that they are in the process of identifying laboratory assets left unused in the aimags over the last ten years so that they can combine with current used assets and rebuild a monitoring program. They also indicated that the limited budget of 2 billion Tgs (\$2M) allows for vaccination of only 30 percent of animals in Mongolia. Additionally, some question has been raised about the quality control of domestically produced vaccine being used.

Furthermore, the Ministry of Agriculture (Industry and Trade) must negotiate government-to-government inspection agreements with many "target country" inspection authorities. Numerous agreements are in place with traditional trading nations, but still many of the newly targeted economies proposed by the meat-exporting plan require completion of these agreements. Interested traders especially anticipate the concluded agreement with South Korea, Indonesia, and China.

The state of sanitary levels in Mongolia's livestock processing industry (Food Safety Department) must meet world standards in order to gain acceptance by nearby developed nation' custom authorities. On my last visit, the Ministry had committed to install a federal veterinary inspection monitoring system at the slaughtering plants. They are committed to install world-class standards for anti-and post-mortem federal inspection of live animals and resultant carcasses and offal. This process appears to be on target, as ACDI/VOCA has supplied expertise to develop the infrastructure and proposed regulations for implementation. The author has met with the Ministry and they seem to have the passion needed and appear even more committed to federalize veterinary plant inspection than the last administration. However, we must take into consideration that old adage "*The mind is willing, but the body is not cooperating*" when evaluating the reliability of this zeal.

Inspection of processed product (other than carcasses and offal) was originally scheduled for HACCP<sup>1</sup> procedures only, but current thinking is that a more traditional system of federal inspection might be needed at the onset and then the HACCP monitoring process could be phased in.

Plant infrastructure issues remain an impediment to progress. In each case, however, they are plant specific. A lack of adequate hot water seems to be pervasive to most operations. Furthermore, another major impediment will be the slaughtering procedure flaw that the animal entrails and the carcasses do not remain identifiably linked until post-mortem inspection is concluded.

ACDI/VOCA has provided several USA inspection experts who have identified deficiencies and have suggested remedial action. The author believes that, given enough time, these issues can be addressed. HACCP training has been initiated for government and plant management by ACDI/VOCA. Additional plant-specific training is scheduled to begin in spring 2001. Additional pressure comes from the Japanese, who at the beginning of 2000 have installed a mandatory HACCP system for Japanese meatstuffs very similar to the USDA FSIS action several years ago. This has canceled the horse feeding and slaughtering for export to Japan project that was operating in Mongolia.

A seemingly outside issue to increasing exports is the small-scale (a/k/a illegal) slaughter and manufacture of livestock products (*informal sector*) throughout the

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<sup>1</sup> Hazard Critical Control Points originated by NASA (HACCP) procedures are plant employee monitoring of sanitary standards of processed goods with federal spot-checking of validity of the plant monitoring.

country. The author will attempt to discuss the issue relative to the lack of progress in value-added production of value-chain products.

***The second domain to discuss is the development of a marketing initiative successfully targeting customers***

The creation of the Mongolian Association of Meat Exporters (MAME) has proven to be a successful approach in converging the forces to expand exports.

**Table 1—Mongolian Association of Meat Exporters (MAME)**

Makhimpex	Producer	Joint Stockholding Co.
Darkhan Meat Expo	Producer	Joint Stockholding Co.
Dornyn Govi	Producer	Limited Liabilities Firm
Eviin Huch	Producer	Limited Liabilities Firm
Bagahangai	Producer	State-Owned
Droned	Producer	Joint Stockholder Co.
Prod-impex	Trader	Limited Liabilities Firm
TBD Anduud	Trader	Limited Liabilities Firm
BC-Mongolia	Trader	Limited Liabilities Firm
Consulting Unit	Consultants	Limited Liabilities Firm
Sergen Mandalt	Producer	Limited Liabilities Firm
Hunstech	R & D	State-Owned
Wakamaru Mongolia	Trader	Limited Liabilities Firm

The group has proven able to focus the industry point of view with the appropriate government Ministry. As reported by Dr. S. Deleg, President of MAME, since the transition to a new government administration, little has been lost and continuity of purpose seems to be evident in Ministry actions. There is some concern by the USAID “Competitive Initiative Project” that transfer of livestock product trade responsibility from the Ministry of Agriculture and Trade to the Ministry of Agriculture may negatively affect the marketing approach from the standpoint of government aggressiveness.

However, several actions of MAME indicate that progress is apparent. Based on the plan of action proposed by the author, many public relation activities have occurred in the press and media. MAME has been working with the Mongolian

trade officers in their embassies worldwide, and, in the case of Egypt, have made contact with several traders. One buyer has just arrived and another plans to visit soon. In addition, MAME is working directly with Japanese trade officials in the Japanese Embassy in UB. Furthermore, there is MAME discussion of 240,000-ton beef quota allotment expressed by the South Korea commercial attaché. Several trade missions to Siberia and China have been concluded. In Siberia, they deepen their customer base, but in China, they await the government-to-government agreement conclusion. Nonetheless, they seek funding resources for a trade mission to the Mid-East region.

A local industry conference was held in July 2000 (USAID-assisted), wherein many individuals and firms were represented in the agenda of increasing exports. An industry research group was formed (Meat Research Coordination Council) to further consolidate the Mongolian industry and academic intellect to the task of increasing exports of value-added livestock products. Documentation of resultant actions of the council will be published by MAME. Creation of a Mongolian Marketing CD-ROM and video is under production by the USAID "Competitive Initiative Project" for distribution to potential importers, trade show attendees, and embassy trade officers, etc.

Interaction between MAME and government is apparent. The Ministry has updated its "Meat Export Plan of Action" under the urging of MAME. A program to develop export to Russia of \$4.1 million worth of Mongolian beef carcasses was implemented by the government. MAME has been assigned the task of allocation of this quota between Mongolian slaughterers, wherein product is shipped to Siberia and, with proper delivery documentation; the Mongolian Ministry of Finance pays the bill.<sup>2</sup> According to Dr. S. Deleg, so far this year, \$3.1 million has been dispersed

A recent roundtable (reverse trade mission) with Russian authorities was held in September, and MAME was present. Russian authorities expressed great interest in expanding imports of Mongolian meat carcasses. An experimental shipment of 130 tonnes has been successfully delivered to St. Petersburg, and additional product (1,000 tonnes of boneless beef) is sought. An upcoming trade mission to Mongolia headed by the new president of Russia is scheduled and by invitation will be attended by MAME officials. Potential transactions in the Middle East (through Embassy contact) have been discussed, and MAME is confident they will eventually be consummated. Transactions to South Korea, China, Japan, and Indonesia are stymied by the lack of official government-to-government sanitary agreement.

MAME reports that now that donor-nation shipments of meat to Russia have ended, the demand for Mongolian product has increased. Indication of shifting attitudes is the fact that Letters of Credit and even some advance payments have

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<sup>2</sup> Informed sources report this is a program wherein Mongolian Government short-term debt is repaid to Russian Finance Authority with in-kind transactions rather than in currency.



accompanied Russian purchases. This change from last year is attributed to a well-financed meat-trading firm in Moscow showing great interest in purchasing Mongolian livestock products. MAME has had discussions with official Russian authorities and private parties for a possible joint-venture slaughter and further processing facility near the Mongolian border (Uvs district) with Siberia. According to MAME, this would lead to sales of processed value-added sausage directly to Siberian (Ekaterinburg region) consumers.

Based on Dr. S Deleg's opinion, a 20 percent increase of exports to Russia will be experienced by the end of 2000. Due to some issues outlined above (animal disease outbreaks), Mongolian purchase of animals started later than normal. Moreover, this resulted in fewer shipments, as indicated by the negative growth statistic from the first 8 months of 2000. This distorts the 20 percent estimate lower than it might have otherwise been.

During plant visits, the author noticed that the plants were removing the tenderloin muscle from each beef carcass. This is the most palatable and valuable muscle from any animal and is known as the fillet. Typically, in the U.S. Utility Grade carcass, the tenderloin is trimmed as Peeled-Stripped-Muscle-On (PSMO) and should weigh about 3 to 4 pounds per carcass. It has an extremely high value, depending on the eating quality of the source carcass, of \$3 to \$4 per pound. According to plant management, the Mongolian value to local restaurant trade is \$2 to \$3 per kilogram. The weight of each piece should range from 1.36 to 1.81 kilograms. However, most observed pieces were less than a kilogram. Investigation shows that the cut is overly trimmed and the head portion is incorrectly being removed. This means the missing  $\frac{1}{4}$  to  $\frac{1}{2}$  kilogram for each carcass results in a loss of \$.63 to \$1.25 per processed carcass, or \$1.26 to \$2.50 on each animal.

Another area for discussion is livestock marketing by herders. Very little has been done in this area. Part of the goal of this work is to improve the economic benefits linkage from exporting back to the herder sector. Current selling prices of livestock (approximately \$260 to \$310 per ton gate price seems inadequate compared to corresponding world prices. The USAID GOBI Project has indicated some structural adjustments for sheep/goat herder organizations in fiber selling. The author will offer some similar alternative organization structure (see Appendix B) to improve pricing power in all livestock selling.

ACDI/VOCA has supplied high levels of technical expertise in production and marketing. Dr. William E Rice has laid out marketing suggestions that follow many of the author's suggestions but has added a more detailed plan for implementation. Many other reports give additional depth and breadth to marketing of the products.

***The third and final domain to review is the methodology on delivering (transportation-mode) the livestock to slaughter and the goods to the final***

When all is said and done, the transportation issues remain troublesome. The infrastructure of the Mongolian over-the-road system is unfavorable. However, the author finds that wholesaler transactions are occurring and will identify ways to lubricate this transportation activity. Scheduled air transport availability remains questionable and alternative charter schedule is irregular.

Container-rail shipments to Tying, China, the port of choice, have advantages. No China taxes are imposed, agreements are in place, and refrigerated rail cars (containers) are available. MAME is working closely with the International freight-forwarding firms operating in this region. The competitiveness among the freight forwarders is strong enough to keep the price efficient. For example, TUUSHIN CO., LTD; UB Railway International Freight Forwarding Center; NTP Co., LTD; Progress-Trans Co., LTD; World-Trans Co., LTD; and "Esysun Burd" Co., LTD are willing to bid for business now. Several large Asian companies are present in Mongolia and have their branches in Ulaanbaatar. The Korean companies appear most aggressive.

Another major issue is the transporting of livestock to the slaughtering facilities. Overland driving (*under their own power*) is an expensive way (*in terms of animal shrinkage and health*) to get livestock to the plants. Limited truck transport exists, but with cooperation from the Ministry of Transportation a viable rail transportation system can be developed (see Appendix A) over the next few years to improve the situation.

## **ACTIVITY TIMETABLE—UPDATE-REPORT**

There were nineteen activities, to be accomplished as outlined in the last report during the first phase (see Table AA, Establishment Package January 2000 to June 2000) and this section will outline incremental activity performance:

### **Organize Press Conferences Announcing MAME Activities**

Many press conferences have been held during the past period. MAME officers have appeared in events in January, February, April, July, and September 2000. Several events were USAID-assisted, wherein training in technical and marketing were part of the agenda. In November, MAME officials will attend a Russian trade mission headed by the Russian president.

### **Strengthening MAME Financial Structure**

MAME members have paid a charter fee of 1M Tgs and an annual renewal fee is expected from each member as well. MAME will be developing a program, providing services for a fee as an additional revenue source. Currently trade mission travel expense and trade shows supplies expense is under-funded.

### **Elaboration of Newly Established MAME Office**

An office with furniture and computer with peripherals has been opened in the Chamber of Commerce building in Ulaanbaatar. As of June, a full-time manager has been found and is operating the association's business on a daily basis.

### **Set in Place MAME Organization Model**

MAME is a duly registered NGO. Its charter and regulations are in accordance with the rule of Mongolian law. Membership has swelled as outlined herein. In addition to traditional Mongolian meat trading organizations, many domestic and foreign buyer and supplier organizations have applied for membership.

### **Set in Place Consensus Building Apparatus**

MAME officers have had open access to all government ministry officials. There is a constant flow of dialogue and interaction on many issues of common interest between MAME board of director members and government officials.

### **Set-in-Place Domestic and International Statistical Information Set**

A plan is being developed by the full-time manager for the collection of domestic pricing of both animal and product transactions. The plan calls for the dissemination of this information, minus the actual names of the traders, back out to the membership. This plan, however, is in a preliminary stage at this time.

### **Collect Subscriptions to International Trade Publications**

Currently, information is coming in from several international sources: USDA FAS, Australian Meat Board, Russian Ministry of Information, and the US version from Iowa State University, Department of Animal Science's USMEF information bulletin.

### **Seminar Training Members**

ACDI/VOCA and the Competitive Initiative Project have sponsored several training seminars over the past several months. The subject matter was HACCP procedures, technical aspects of producing meat snack foods, and a major seminar of marketing principles. Scheduled for future seminars are more HACCP procedures for operational personnel and the preparation skills needed by entrepreneurial operation of enterprise performance. Some commercial attaché training is being discussed; however, the funding for the expense of returning embassy personnel for the training is still unresolved.

### **Develop Market Survey**

A program following the market survey procedures outlined in the author's first report has been implemented. A questionnaire is being developed to be distributed to potential buyers as well as to consumers. This survey process will require more time to complete and then results tabulated and then analyzed and/or interpreted.

### **Customer Onsite Search—Siberia/China**

Different officers of MAME have accomplished several missions. In Siberia, the goal was to penetrate past the Russian border monopolist buyers in order to sell directly to wholesaler customers in the large Siberian cities. Progress has been made in direct contact with these potential customers. Hence, the customer base from Siberia has been broadened. Additionally, a large well-financed Russian meat trading organization, centered in Moscow, has completed actual transactions for delivery as far away as St. Petersburg. Many new transactions are contemplated in the near future.

In the case of China missions, contact with many Chinese potential buyers has been accomplished. However, the government-to-government inspection agreement awaits completion before official transactions will occur. Shade-Tree slaughter near the Chinese border and illegal trade (*informal sector*) are flourishing. Additionally, Chinese buyers come directly to Mongolian slaughter facilities to purchase offal items.

### **Central Storing Capacity Research**

Much discussion has occurred on this subject by board of directors. No understanding has been reached on how to accomplish a centralized facility. However, joint discussions with Russians on developing a centralized

consignment-type facility to be located in Siberia are underway. An ongoing talk continues for this project.

#### **Central Foreign Veterinary Services Coordination**

Several roundtable discussions between Russian and Mongolian government officials have occurred. MAME has presented several proposals that would make the foreign veterinary task more efficient. MAME awaits approval of its proposals from both Mongolian and Russian government agencies.

#### **Transportation Networking Issues**

MAME feels that the individual companies would best handle transaction transportation issues for Russian shipment to the north. However, MAME involvement for shipments by rail and/or air for southward shipment would best be negotiated by MAME. A program organized for this purpose is under deliberation. Up to this date, very few transactions for southward shipment have been completed. However, contact with five freight-forwarding firms is the first step in the plan.

#### **Financial Aspect of Industry Support, Investment, Working Capital and Entrepreneurial Training**

Charter members each paid a fee upon signing on. This has been the starting capital for the organization and has funded office expenses to date. Each member is required to pay an annual assessment, which will be due soon. These funds are not sufficient to cover expenses for trade show and other marketing efforts. GOBI project has developed entrepreneurial training, wherein accounting information is used as a management tool. This training could be offered to livestock processor management.

#### **Develop Local Value-Added Trade Possibilities**

The author has suggested several value-added products for exporting consideration. The canning of inexpensive formulations of offal/meat formulations, dried meat snack foods, precooked/and or fresh frozen ground beef, and, of course, sausage products and boneless meats must all be considered. The involvement of the Hunstech Research Corporation for researching new products will add a new dimension to this issue.

#### **Organize Government Advocacy Program**

A day-to-day communication network between government and MAME officers is firmly in place. MAME considers its communication network with the Ministry as reliable. MAME feels it has the appropriate active dialogue with government.

#### **Develop Credit Guarantee of Payment Schemes**

Use of long-term Mongolian government debt repayment to Russia in the form of carcasses has proven successful. A \$4.1 million program in the form of a delivery quota was given to MAME. They were instructed by Mongolian government to allocate amongst the members. Upon presentation of delivery documentation, the Mongolian ministry of finance presents payment to MAME member. So far this year, \$3.1 million has been dispersed, as stated by MAME president to the author.

#### **Develop Coordination of Processing of Export Casings**

The author has produced a report (Component Four) to be distributed soon, which describes in detail the identity and the processing of casings from cattle, sheep/goat, and hogs during the slaughtering operation. Packers showed extraordinary interest in receiving this report.

#### **Develop Training for Management of Enterprise**

No training for this subject has occurred yet. The GOBI project will be starting this type of training soon. It is hoped that MAME members would be able to participate in these training activities.

There were eighteen activities to be accomplished in the second six months as outlined in the last report during the second phase (see Table BB Marketing Package July 2000 to December 2000), and this segment will describe advancing action performance

#### **Study International Markets (Possible Targets)**

Besides the trade mission to Russia and Siberia, no other direct inquiries were made. However, Mongolian Embassy personnel have uncovered several trade possibilities from the Middle East and other targeted economies.

#### **Identify Trade Barriers (Implicit and Explicit)**

A report was prepared by the author (Component Two) for distribution to the Mongolian industry outlining each targeted economy's trade requirements. The industry awaits the distribution of this report. More country-specific work will need to be done once government-to-government agreements have been concluded.

#### **Possible Trade Missions by MAME to Siberia and China**

No new mission occurred during this period. However, several reverse missions from Russian buyers have occurred and are scheduled soon. The results have been outlined elsewhere in this report.

#### **Establish Networks with Different Foreign NGOs**

No working relationships have occurred. Work with foreign embassy commercial attachés stationed in Mongolia has produced several trade possibilities to-date.

#### **Involve Ministry of External Affairs in Marketing Efforts**

This aspect of the new marketing approach for the Mongolian livestock processor has proven successful. Additional training of embassy personnel has been planned. The current constraint is finding funds to cover the cost of returning personnel to UB for the training.

#### **Training Local and International Marketing of Value-Added Goods (Foodservice vs. Retail)**

Very little discussion of separating retail and foodservice value-added products has transpired. It seems that development of true value-added products needs more resources and debate.

#### **Barter Trading Feasibility Study**

Since this year Russian buyers are issuing Laces and giving advance payments, little barter trading is required or wanted. This issue will have to be looked at during a later time frame.

#### **Devise Government Programs on Meat and its Improvement**

During the September, a conference of interested parties in exporting a council of Mongolian academic experts was formed for this research. Additionally, the Hunstech Corporation, a quasi-government research agency, has been preparing a plan of action. Additionally, they have the resources to develop, produce sample batches, and design the production line for new products. They await the challenges of the future.

#### **Establish Animal Husbandry Improvements (Genetics)**

The council referred above to has this livestock improvement mandate in its research commission. Additionally, ACDI/VOCA has been instrumental in developing cattle breeding associations in Mongolia to advance this purpose.

#### **Comparable Research on Meat Trading Requirements in Different Regions Targeted, i.e., China, South Korea, Japan, Viet Nam, Mid-East**

This subject has been attended to in the prior time frame. However, once inspection agreements have been completed, additional research may be required.

#### **Examine Auction Local Markets (Price Efficiency Generation)**

Little attention to this issue has occurred. The GOBI project has addressed the issue from the fiber selling side. The author will give this issue attention in more

detail. An explanation of an auction market for livestock markets was part of the author's first report (see Appendix B).

#### **Organize Herder (Small-Sum) Loan Program (GOVIINEKHLEL)**

The author met with this entity during the October 2000 visit. Inclusion of detail loan policy will be part of this report.

#### **Develop Feedlot Scenarios to Extend Slaughter Season**

Several MAME members have developed business plans for use of feedlot scenarios. The actual feed is still a major problem, since Mongolia does not readily produce feedstuff products. Nonetheless, a Japanese investment corporation project (WAKAMARU) operating in Mongolia has successfully fed animals (horses and cattle) to desired weight using only Mongolian fodder.

#### **Central Storing Capacity Research/Coordination**

As mentioned in the last time frame, discussion of participation in a contingency warehouse facility located in Siberia is still in discussion.

#### **Central Foreign Veterinary Services Coordination**

No new data on this issue.

#### **Transportation Issues (20-40 Ton Containers)**

According to reliable sources, it seems that several freight-forwarding firms are gaining interest in competing for container shipments of frozen meat. However, since there is limited opportunity for transactions, we cannot test this competition yet. Air shipments remain very expensive; however, some indication by the USAID Competitive Initiative project indicates that some off-season charter space during the Mongolian meat shipment season may be found.

#### **Develop Training for Financial Management of Enterprises**

As discussed earlier, training in this subject is readily available. The level of enterprise management must recognize the need before a major demand for this training will develop.

#### **Develop Strategy for Influencing Trade Barrier Issues**

This subject was addressed earlier. It also requires more potential transaction interest before additional research should be accomplished.

#### **Develop Strategy for Maximizing Offal and Inedible Returns**

This is a major issue, both for the livestock processor and for the livestock producer. In order to raise the economic benefit back to the livestock raiser, we must increase the revenue of the livestock processor. The author's report



(Component Four) indicates that a potential \$155/ton can be derived from effective marketing of offal. Mongolian processors are not maximizing this return. If the report is studied and acted upon, this could raise revenue by which the additional return might be reflected as a higher livestock purchase price.

## **OBSERVATIONS BASED ON PLANT INTERVIEWS**

Part of the assigned scope of work (SOW) was to visit the major exporting firms' processing facilities<sup>3</sup>. The purpose of this exercise is to identify any issues that need to be addressed that could further increase the export opportunities for Mongolia. The author feels that the comments should remain anonymous and no connection to a specific plant or individual will be indicated. This is to protect any proprietary information gathered by the author.

### **Comments and Issues**

Under the new government administration, the number of approval signatures for export transactions has increased from three to as many as nine. There were ten, but with MAME support, the government dropped one required notary signature. The individual also stated that there is little concern by government authorities, for the cost of time or travel expense incurred by the exporter when their signature is sought.

Major concern exists among meat processor management that traditional Russian market conditions have improved and now the determination and zeal by government and some exporters to develop other markets will diminish. Several forward-thinking processors do not want to become linked and dependent to the Russian economy again. Only by development of value-added livestock products and multiple market opportunities will real economic freedom exist.

Several processors are saving some of the offal items discussed in the author's "Component Four Report". However, a detailed study of each item discussed by the processor might lead to dramatic increased return to slaughter revenue. Many of the plants visited ship frozen, bagged -aw offal back to Russia for use as fodder for mink and fox farming. This may be easy, but is not the highest return possible for this product. The author's "Report four" demonstrates that a full return of \$155/ton from offal has a material impact when typical animal value is \$260 to 310/ton. Moreover, in the process of deboning, final distribution of the bones (*bone meal manufacturing*) can materially affect returns.

Over-the-road distribution to UB from distant processors is occurring. A ten-ton refrigerated lorry makes the 300-km trip in ten hours at an average round trip cost of \$400/round trip. The lorry returns with other products (food, etc.) to be sold locally. In another case, a 12- to 14-ton lorry does a similar trip (240-km) several times a month at a cost of \$175/round trip. This indicates that a viable UB

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<sup>3</sup> 1) Dashkhuu Gerelkhuu, General Director Bagahangai; 2) Borkhuu Delgersaihan, General Director Dornyn Gobi, Sainshand; 3) Ts Bayarssaihan, General Director, Eviin Huch Bor-Ondor; 4) Gerel Davaa, Deputy Executive Director Makhimpex; 5) Badraa Boldbaatar, Vice Director Darkhan Meat Expo; 6) S Deleg, Executive Director, BC-Mongol; 7) L. Chuluunbaatar, General Director, MON-SO; and 8) Batmunkh Ganbold, Secretary MAME.

market for major processors could be initiated when a UB local distribution system is in place. Major processors then could develop value-added items for domestic consumption. This could springboard the production of value-added products for export marketing that is currently stymied by a lack of domestic demand.

Based on interviewee comments, “Shade Tree” slaughtering in the countryside and exporting across borders (both China and Russia) are having a chilling effect on legitimate export opportunities. At the same time, uncontrolled (aka illegitimate) slaughtered meat is coming into UB and other large centers, i.e., DARKHAN. This is depressing local prices to the point that major legitimate suppliers cannot produce standard products, nor can they effectively research and experiment and produce value-added products. Several facilities had up-to-date equipment unused because they have no demand for those value-added products. For example, one plant has a modern, fully equipped complete sausage-making kitchen that has been used for experimental production only. In another, two plants and a fully equipped boning facility lie dormant for lack of demand. Informed sources put Mongolian per-capita meat consumption at 80 to 100 kg annually. This works out to 60,300 tons of demand between just the two cities mentioned, and denial of this volume to legitimate producers counteracts their ability to produce value-added products and gain experience for exporting these products.

Many of the facilities visited had laboratory analysis capabilities for all three categories of concern—specifically, a serology lab for blood analysis (e.g., anthrax), a bacterial lab for microbiological analysis (e.g., E. coli and Salmonella), and a chemistry lab for mineral and pesticide analysis. Additionally, it was noted that plant inspectors were incising appropriate organs and glands from each animal in order to identify lesions.

As a general comment, the level of equipment sophistication was, in the author’s opinion, rather good, in many firms, for the type of production common in Mongolia. However, some managers did comment on the lack of replacement parts available to them. Additionally, there is question in the author’s mind as to the efficient use of this equipment. On several occasions, the line stopped (with workers idle) due to some difficulty with the steady supply of animals into the system.

On another visit, we observed that the equipment being used on the slaughter line did not automatically move the carcasses down the queue. We observed women workers struggling to push animals 6 to 10 times their own weight along the processing line. In one part of the operation, the entire inner contents (internal organs) of the carcass fall at the female workers’ feet. She has to push, with her boots, the contents onto the next section, which then carries the internal organs away to be further cut up.

Some of the major processors of Mongolia are in financial stress. I visited several that have limited working capital and are only doing contract-slaughter for other entrepreneurs. They are paid \$11 per head and paid \$.60 per ton per day for use of their storage facilities. They return the entire product back to the contractor. This type of situation does not lead to aggressive export marketing (which is our goal), but rather to self-survival reactions.

The author believes that canned meats offer a substantial opportunity for exporting to non-traditional markets. The only facility available in Mongolia for processing had only two sizes of can—410 gram and 160 gram. Based on conversation with the management, they feel that these sizes are too large for the traditional market they have been used to selling. They are not prepared to invest in new equipment at this time. However, in the author's opinion, the non-traditional markets of Southeast Asia (Indonesia, Malaysia, Viet Nam, etc.) might be ready for a larger can, as they have larger families. Additionally, a low cost item produced from offal could make Mongolian canned meats very competitive in these markets. The author suggests that a major USA producer of this type of product be checked out on the Internet at [www.foellpacking.com](http://www.foellpacking.com) that will provide several low-cost potted canned meat recipes for consideration.

## **OBSERVATIONS BASED ON MINISTRY INTERVIEWS**

Another part of the SOW was to visit the pertinent Ministry officials to ascertain export policy changes since the new administration has taken over. The purpose of this exercise is to identify any issues that have reversed or need to be addressed which increase the export opportunities for Mongolia.

### ***Nantsagiin BATSUURI, Director Food Safety***

Mr. BATSUURI is well versed on the export expansion issue. He had a copy of my original report and stated that he was appreciative of my support for federalizing food safety inspection in Mongolia. He understands the difficulty in making this change and is fully committed to see it through. He explained that they are under reorganization and that ACDI/VOCA has helped to propose a structure that would create the strongest link between the agency and the field. Actually, the ministerial reorganization task group is considering the proposed organization chart very soon and he expects approval.

He stated that he expects training by ACDI/VOCA experts to begin in spring 2001. He stated he would like to get information on the testing and monitoring procedures for pesticide, mineral, and added hormone. I explained that these were very expensive tests and would require costly laboratory equipment. The author's Component Three Report on the setting up of a food safety laboratory did not cover these tests for the onset of operation because of the high costs.

The plan is to require all export slaughters and most major domestic suppliers to be under this inspection mandate. Mr. Batsuuri discussed the domestic problem of uncontrolled slaughter and sausage making. He is examining the laws that control this issue and plans to address unsafe food products being commercially sold anywhere in the cities of Mongolia.

### ***S. ENKHBAYAR, Head of Food Department***

This is the policymaking and implementation section of the Ministry of Agriculture. They have updated the last administration export plan and feel they have strengthened it. They have an export goal of 32,000 tons per year. They hope to assist in more efficient use of plant facilities, updating equipment, and giving assistance in obtaining sufficient working capital. Ms Enkhbayar listed a detailed list of policy initiatives, which happen to follow word for word, the author's first list of recommended actions.

### ***R. SANJANTOGTOK, Director State Veterinary Service***

He advised that the department has been segmented into an implementation of policy division and a coordination or monitoring division. Based on his conversation, there was some confusion as to the job descriptions for the

different agricultural divisions; however, he may be speaking of implementation and the actual monitoring by another division.

He explained his mission as one that will 1) improve health of livestock of Mongolia and 2) control and monitor the health of livestock going into the slaughter plants. Actually, this is anti-mortem inspection, which is considered part of the food safety division mission. He also stated his mission is to implement changes to state veterinary controls (a mandatory system), which sounds similar to the food safety division mandate.

He estimated that within two years the changeover would be completed. He also claimed that his budget of 2 billion Tgs or \$2 million is not sufficient to vaccinate all the livestock. This funding will only cover three in ten animals. He claims his goal is to initiate a world-class management program for Foot and Mouth that guarantees quick diagnosis of outbreaks and inhibits its spreading. He mentioned at the meeting that the agency's goal is to develop the assets to vaccinate for Brucellosis all livestock and not focus on the adult animals. Questions about the reliability of the Mongolian anthrax vaccine will be addressed to prevent further outbreaks.

Mr. Sanjantogtok feels that a central laboratory will be used for training and then federal technicians will use the plant laboratories for federal testing. He is also surveying the provinces to gather the laboratory assets left behind 10-years ago with State veterinary service was privatized.

***ODONCHIMEG, Officer at FIFTA responsible for Meat Industry***

The Foreign Investment and Foreign Trade Agency of Mongolia (FIFTA) are responsible for the promotion and facilitation of direct foreign investment and foreign trade. They offer matchmaking services to both foreign and Mongolian investors seeking cooperation in areas of technology, management and marketing.

FIFTA is first contact for investors seeking to establish business in Mongolia. The FIFTA One Stop Service Center provides information related investment and/or incorporation procedures.

Of interest to exporting are the incentives that FIFTA offers any meat processing joint venture; specifically, if they export 50 percent of their production, they get a 100 percent income tax holiday for three years, and after that, a 50 percent income tax holiday for an additional three years. Based on observations of the "Competitive Initiative" project, these incentives are "me too" and do not differ from other LDC who want to attract DFI. Under the current situation, wherein the markets to Russia and soon China seem to be opening for at least carcasses and boneless, a foreigner joint venture would be highly desirable opportunity for both sides.

## **OBSERVATIONS BASED ON INTERESTED PARTIES'** **INTERVIEWS**

### ***Hunstech Corporation B. Khuukhenkhuu, Executive Director & S. Urtnassan***

Created through the Mongolian government 1997 Resolution #31, this entity is meant to coordinate research, production, and trade for the agriculture industry of Mongolia. This agency was a major contributor to the new government livestock products export policy discussion and implementation. The quasi-government corporation is divided into the following units: Research section; Management and Marketing section; Chemical and Biological laboratory; Grain and Grain products laboratory; Microbiological laboratory; and Designing and Constructing center.

The director is very anxious to advocate developing an array of value-added livestock products for export. He believes strongly that Mongolia's best chance for economic success lies not in continuing the dependence and linkage only to Russian imports, but rather that development of transactions with other nations will eventually bring economic success and independence. He is aware of the tenancy for the meat industry to take the path of least resistance (expanding exports to Russia) and to forgo the more difficult path of developing value chain trade with other non-traditional trading partners. He is an active participant in MAME and will use his persuasive skills to have MAME develop a coordinating strategy to point to the correct direction for Mongolian meat industry.

### ***Wakamaru Co., LTD, M. OTGONJARGAL, Manager & L. OTGONCHIMEG***

The firm, started in April 1996, is a Japanese Investment Corporation (JIC) to develop technology to feed horses and send specific boneless horsemeat cuts back to Japanese market. They had been somewhat successful until the implementation of mandatory HACCP procedures for Japanese meat products. Since Mongolian plants do not yet have such procedures, all fresh-frozen products have stopped going to Japanese market and their feedlot is empty.

The author suggested that they consider licensing their successful feedlot technology<sup>4</sup> for the feeding of Mongolian cattle in order to have livestock to extend the slaughter period. Additionally, the author suggested—and they agreed—to get samples of the dried product produced by USAID expert last month (JW Asbill, ACDI/VOCA PN154014). They said they would take this dried value-added product to Japanese market for evaluation. Dried product (beef jerky and dried sticks) is in demand and may be able to pass through the sanitary restrictions that fresh frozen meat must adhere to.

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<sup>4</sup> Wakamaru has developed various proprietary scenarios to feed animals for 4, 6, 8, and 12-month period to specific weight gains using only domestic fodder material.

***Ulaanbaatar (UB) City Government, A. OTGON, Food Industry Officer & G. ZOLBOO***

These individuals claim they are responsible for policy implementers and are not monitors of policy. They explained that beyond Makhimpex Company<sup>5</sup> there are 52 small food-processing operations in the city, ten of which they consider well-equipped and successful marketers of livestock products, especially sausage. They obtained a high level of technology due to soft loans from the German government in the early 1990s. These firms produce high quality and have developed brand names: that UB consumer's desire. The enforcement of food safety in the marketing aspects of the distribution system is the focus at this time.

They explained there are 13 market centers in the area, of which two are open-air and have no water service. There are several formalized official locations for slaughtering of animals, but they know that other uncontrolled slaughter is occurring. They are aware of this uncontrolled slaughter that if it were stopped might tend to raise consumer prices.

At this time, this would be a politically undesirable effect. They explain that consumers must demand more food safety precautions and understand they mean higher prices, before they can be implemented. Mongolian "home-made" or "home-slaughtered" seem to be preferred by local consumers as better tasting than "factory-made" products.

***Mongolian Technical University, School of Food Technology, Dr. B. ENKHTUYA, Dean of Faculty & Department Head***

The normal curriculum of the school is based on the old Soviet Union "production-oriented" training. In Mongolia's transition to a market economy, this training is wholly insufficient for the attainment of "competitive advantage building" of Mongolian food business.

The management training of these students in westernized economics, accounting, and marketing is non-existent. Many experts pass through UB giving technical assistance to individual firms and government ministries, most of whom are highly qualified in curriculum building in the most prestigious agricultural schools in America. Let us take out a small fraction of their time to help build model curriculums for this institution. These Mongolian students are shaping the future; let us be sure they have the proper training from the first day on the job. Additionally, the dean asks for help in updating the curriculum for the animal science aspects of livestock product production

***Christopher SUZUKI, Chief Executive, Goviin Ekhlel Co. LLC***

They plan make loans to herders (see Appendix D).

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<sup>5</sup> Makhimpex in prior times had 80 percent of the UB market and had hundreds of retail locations. However, because of management problems many employees left and opened their own private operations.



## **MEAT VALUE CHAIN LIVESTOCK PRODUCTS FOR EXPORTING**

Much is written about this subject by the author and also by many other experts who have come to understand the Mongolian situation. It is not the intent of the author to rehash the same items, but merely to reiterate the important points for the efficient expansion of value-added products for exporting.

### **Carcasses and Boneless**

Not much new can be said about carcass production as it relates to exporting to traditional importers like Russia and some other prior Soviet Union-affiliated economies, except for some offal utilization reforms. Additional modernization, which would improve operational efficiency within the production for Russia and potentially China, offer a large financial opportunity at this time. Management training in the productive and efficient use of the labor resource seems to be severely needed as soon as possible. It is obvious to the author that, without exception, more competitive advantage could be derived just from efficient use of labor without regard to all other impediments.

However, the in-plant sanitary and associated infrastructure status of Mongolian processors must be greatly improved for entrance into most other non-traditional trading economies. Additionally, the health status of the livestock population must be improved to world standard as well.

Boneless production needs expert assistance in efficiency of operation. However, without more volume of sales, many operations cannot be trained to perform as desired. What would be useful are more sales and a specific program of training in the various segregation of cuts schemes used worldwide

As part of the boneless component, a further process value-added item exists. This is ground (minced) meat. The author has discussed in prior reports the pre-cooked, institutional version of this bulk product. However, at this time, we want to discuss fresh/frozen minced (ground) meat for retail. In most Eastern European markets, including Russia, minced meat is a major component of consumer sales. It can be sold either bulk, prepackaged, spiced and precooked in pattie form, etc., or in some combination of form. Contamination of minced product by microorganisms does present some concern but does not prejudice a major block to success in Eastern Europe situation

The author spent time in a “kiosk”(small portable retail store) in which lines of consumers waited with their own little plastic bag for a scoop of minced meat. The food processor I worked with in Saratov, Russia would make boneless and grind over 18 hours per day to keep up with the demand. In a large Estonia plant, they not only prepack the minced meat, but also sell pre-spiced and pre-cooked patties, over 3 tons per shift. They then cooked product and sent in bulk or vacuum packs of 14 pieces to the retail shops. The author feels that these

products, once developed for Mongolian consumers, can be exported for nearby countries consumers. Much of the equipment needed (except cookers) is already in the plants to produce these products.

### **Tinned Meat Products**

Currently only one possible canning facility exists in Mongolia. This line is not in use and the owners claim that the size of product that can be produced—410-gram and 160-gram sized units—are not in demand from traditional Russian buyers. They claim they have limited capital and cannot retool the line. Nonetheless, designing tinned meats for the export market, Mongolian meat exporters must consider numerous circumstances. They must develop livestock products that will appeal to foreign consumers in Siberia **but also especially targeted** to Southeast Asian and Mid Eastern countries.

Using the author's Component Four offal report, several items mentioned could be the main ingredients for canned potted meat<sup>6</sup> formulations, as well as vegetables mixed with meat (stews). They can be convenient and very low cost and still have a distinctive Mongolian character, although the can sizes are larger and with regular meat formulations the unit price could be considered too expensive for the typical Siberian family targeted. This may not be the case for the cheaper formulation for the tropical environment consumer. Using the inexpensive raw material mentioned, product could be designed to fulfill a specialized demand at a very low price for the other targeted family buyers who have limited choices of low cost meat products.

Unofficial research has suggested a demand for desirable Mongolian tinned meat in countries like Philippines, Malaysia, Indonesia, Viet Nam, Thailand, etc. The first market research should be to purchase tinned meat samples sold in Siberia, as many Eastern European meat processors produce huge quantities of tinned meat varieties that could be duplicated and even improved by Mongolian processors. Secondly, a **simple market survey methodology** should be used to send "shoppers"<sup>7</sup> into the major outlets located in the foreign urban areas of interest (Southeast Asian and Mid Eastern warm climates). They should be able to survey the product on the shelves and collect data on the type of tinned meats imported as well as the most popular packaging desired by local population. After evaluation of data, samples can be collected and shipped back to Mongolia for duplication and enhancement. As simplistic as this suggestion sounds, it could be very effective without high cost. ANNEX BB of the author's last report contains the methodology for can manufacturing as well as a basic recipe for the ever-

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<sup>6</sup> Potted meat is a formulation designed to be inexpensive, as the main ingredients are the lower priced offal items derived from the slaughter of livestock.

<sup>7</sup> A "shopper" is a person sent into a situation disguised as a typical shopper but really doing market investigations. This is common methodology used by western companies to self-evaluate services given by the staff to customers. This could be Mongolian embassy staff doing market evaluation study.

popular SPAM-type product. The following is a listing of possible products including potted-type formulations<sup>8</sup>.

Meat, Jellied	Mammy Style Hash	Curried Mutton
Tongue, Beef	Potted, Meat	Potted Beef
Luncheon Tongue	Potted, Tongue	Potted, Horse
Canned Tripe/w/Milk Sauce	Canned Brains/w/Milk Sauce	
Canned Sausage (Vienna)	Canned Sausage (Bulk)	

### **Sausage**

Much has been discussed relative to sausage manufacture. Few large plants participate in this market. The excuse is that small so-called illegal operations (informal sector) have a competitive advantage since they do not have to follow the same standards as the large plants. Observers point to the fact that large plants are very inefficient in their operations and therefore cannot compete with legitimate small firms who are more efficient. The author has made inquiry into the subject because this lack of production of sausage by large plants inhibits the development of production expertise for possible exporting.

### **Smoked Semi-Dry Sausage**

Dr Romans, University of Illinois, Champaign-Urbana, has visited Mongolia and has written about (Land-O-Lakes Project) the great potential for this category of value-added products. The atmospheric conditions in Mongolia give this product a comparative advantage for Mongolian processors. The author has written at great length on the subject in prior reports and will not repeat. MAMA should be the catalyst for inaugurating a Mongolian contest for the production of the “Blue-Ribbon” semi-dry product.

### **Pre-cooked Minced**

This product has great potential in Mongolian meat exports. Because this is a cooked product, it can by-pass many of the animal health issues currently constraining exports. However, plant sanitary issues will restrict development of a successful product that would be accepted by other developed economies. Once HACCP procedures and the federal inspection system proposed have been implemented, this product will have a chance to succeed. The author suggests that investigation and familiarization of the product and its production should have a high priority in the Mongolian research and development (HUNSTECH) agenda.

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<sup>8</sup> These offal items, include cheek meat; livers; hearts; head meat; tongue; tongue trimming; salted tongue; pig skin; stomach; tripe; weasand meat, brains, lips, snouts, kidney, spleen, melts, etc.

## **Dry Meat Snack Foods**

The world market demand for dried meat snack foods products is suspected to be very strong. Informed sources claim a 28.5 percent increase in the \$1.3 billion USA market alone in 1999. However, for Mongolia, you need to utilize the less valuable cuts, not beef rounds, but the rough cuts from sheep, goats, horses, camels, Yaks and maybe cattle. The good muscles need to be sold for steaks and roasts. The author has done a short market explanation and factual production investigation based on USA case, and the result is expressed in Appendix C.

## **MARKETING OF LIVESTOCK OPTIONS**

Herders could market their animals under various scenarios. This section is designed to offer the structural alternative choices used in the USA. The predominant method of choice has changed over time. This means that the prevalent method for US livestock producers may not be the best choice for Mongolian herders. The Mongolian choice might be a hybrid combination of these methodologies. The main issue is to give the herders as much market price information as possible in order to get the highest return on their livestock, or in other words, have packer agents compete to purchase the livestock. This means we want to develop an environment that will create pricing efficiency. The choices are as follows:

### **Local Cooperative Shipping Associations**

Elements that can lead to the development of this type of organization marketing are: lack of hard surfaced roads; lack of efficient motor trucks; little standardization of grade and weight of the livestock; and the lack of interior packing plants. At this time, this describes the Mongolian livestock-producing situation.

This type of organization is best for the smaller herders who have less than carlot (see tables Appendix A) quantities of livestock. Each grouping of shippers forms an association and has selected a paid manager. This manager stays in close touch with market conditions. Additionally, he ascertains the number and class of animals owned by association members that are ready for marketing. He then attends to all details of initiating the shipment.

This system will result in greatly increased shipments of mixed lots of animals. The animals belonging to an individual owner are given some distinctive mark. The proceeds of the sale are returned to each owner after expenses of transportation and marketing have been deducted. However, this form of marketing might be less desirable as market price information becomes more readily available, e.g., by radio broadcasting.

### **Livestock Auctions**

These are held at predetermined scattered locations in the production regions. These local auction markets become important clearinghouses for locally produced livestock. Sales are on an auction basis with bidding and selling buyers. The detailed working of this auction system is explained in detail in Appendix B. Dealers get many of the animals purchased at the smaller auction, but packers can have their agents present for purchasing as well. Normally, packer agents are at the larger auction locations. The GOBI project has been experimenting with such techniques for fiber sales.

## **Countryside Dealers**

Countryside dealers are independent operators who buy and sell livestock for profit. Their main contribution to the marketing system is the assembling of animals into large lots for efficient marketing. By assembling livestock in truckload- and/or railcar-load quantities, these dealers affect an economy in transportation and satisfy the requirements of the ultimate buyer (meat processor firm). These dealers usually buy from herders and farmers and sell at auctions (see below for descriptions), terminal public markets, concentration or local markets, or direct to packers.

## **Concentration Yards**

Concentration yards are often called local markets, assembly points, or reload stations. They are originally established for the purpose of assembling animals for shipment to slaughtering plants. The animals are delivered to the yard by rail from other points along the way (see explanation in Appendix A). The animals are assembled, sorted, and weighed before being added and forwarded in the partially filled railcar to the final destination. The through freight rate is maintained between points of origin and ultimate destination.

Other privileges include double decking, mixing, and changes of ownership. Concentration yards may be privately or cooperatively owned by herders but can also be owned by, or affiliated with, the slaughtering firms.

## **Terminal Public Livestock Markets**

Terminal market might play the dominant role in the marketing of livestock in Mongolia. The efficient operation of a public market requires the use and cooperation of many facilities, physical equipment of the stockyard company, transportation facilities, commission companies, packing houses, livestock buyers, banking facilities, and market information dissemination facilities.

**The Stockyard Company** renders services that are essential to the efficient operation of the public livestock market. The physical equipment includes chutes, pens, scales, water, and office space to house clerical forces. The yards are available to any and all people who wish to consign livestock or to buy livestock at the market. A yardage fee is charged for the use of the yards against all livestock sold at the market. The stockyard company reserves the right to supply all grain, hay, and bedding required. Additionally, they keep an accurate record of all receipts and shipments, the car number, hour of arrival, name of shipper, and name of commission firm (see below) to which it is consigned, number of head, number of crippled, dead, or injured animals on arrival, and pens used in the yard. The stockyard company does not buy or sell livestock; it merely furnishes facilities to shippers, buyers, and various marketing agencies and receives part of its income from the yardage fee, the sale of feed and bedding, and the rental of office space.

**The Livestock Commission Company** is a firm or agency operation in a public market whose function is to sell livestock consigned to it by the shipper and to buy livestock on order at the request of other customers. The commission company is the sole representative of the owner of the market and acts as his selling agent, making a defined charge per head or per carlot handled. The commission company takes complete charge of the livestock from the time consignment is placed in its hands by the stockyard company until they are weighted to the account of the buyer

The care, quality, and condition of the animals govern the selling price, the supply of animals of that class and grade on the market, and the market demand for such classes or grade. After being sold, the animals are driven to the scales, and after being weighed are turned over to the buyer or placed in custody of the Stockyard Company until called for by the buyer

### **Direct Marketing**

In the USA case, the direct movement of livestock from producers, countryside dealers, concentration yards, and shipping associations to the slaughter points has undergone a rapid expansion. There are several factors responsible for this great increase of direct marketing.

One main factor is the gradual decentralization of the packing industry. This has been brought about by the evolution of plant points moving nearer to the source of supply of livestock. These interior plants purchased most of the livestock directly from producers and encroached on the amount of livestock reaching the public markets. Therefore, many of the larger packers turned to direct purchasing. Sellers of livestock have preferred this type of marketing, as it reduces shipping costs, feed, shrinkage, losses through accidents, etc. In addition, the idea that the livestock is sold when it leaves the produce's facilities played an important role in increasing this activity.

However, a side effect of this increase is to stifle the level of public price information as generated by public market channels. This has led to producers having second thoughts about the savings of direct marketing. In the USA case, this marketing option cannot be readily reversed. New federal laws, passed after furious debate, mandated, but still have not implemented required mandatory reporting of the prices from direct marketing. Although direct marketing offers a very high level of operational efficiency, great controversy about pricing efficiency in the USA system has developed and is not rectified.

## **MAME ACTION PLAN UPDATE**

This plan is based on the fact that several support assets are now active in the Mongolian situation. Specifically, we have several USAID contractors operating in the region that provide leadership in various aspects of assistance. The ultimate goal of this support is to increase the level of livestock product exports and to be sure the greatest economic benefit is equally derived throughout the production chain. The author's plan calls for DAI Economic Policy Support Project, hereinafter refereed to as EPSP, to provide the coordination of efforts of the USAID projects operating in the Mongolian region. Additionally, DAI provides the "real world" interpretation and implementation strategy resulting from USAID contractors' guidance and recommendations.

The foundation for assistance will be from the J.E. AUSTIN ASSOCIATES, INC. "Competitive Initiative Project," hereinafter referred to as CIP, which will point the direction to increasing the productivity and/or competitiveness of the livestock production and meat processing industry operations.

Next will be the arrangement of technical support from ACDI/VOCA, which has a rich tradition of supplying agricultural technical assistance to LDC's worldwide. ACDI/VOCA's role to this point has been essential in addressing the technical improvements in animal husbandry and meat processing slaughter operations. Additionally, they have provided food safety inspection debate and/or training and value-added product production technologies.

The GOVIIN EKHLEL (Mercy International Project), hereinafter referred to as GEMP, designed to fill the gap of a dearth of formal-sector lending in Mongolia, is being expanded to offer herders' short-term loans. These loans will allow the herders the flexibility to better negotiate a more efficient selling price for livestock. The integration and improvement of the pricing efficiency of the livestock sector is the next phase of the DAI project goal. The plan addresses the implementation phase of this issue. See Appendix D for further loan policy detail information.

Finally, the GOBI Regional Economic Initiative, hereinafter referred to as GOBI, provides several other aspects of the USAID blend. The GOBI asset has provided essential guidance in the development of Industry Association infrastructure and operating policy. It provides the framework for future improvement of the livestock production element of the equation. Livestock producers in the GOBI sphere of influence are not alone in the plight to gain some competitive advantage to creating a pricing system fair to them. The steps to increasing price efficiency proposed for fiber sales can be reinterpreted and transferred to the animal sale arena. Setting up of communication between the buyers and sellers for market and other pertinent information used by the GOBI project can also be conceptually transferred to the meat export market information needs.



**Table A—January 2001 to June 2001**

Activity	Resource Source
1. Develop training for managing enterprises including preparations for Federalizing Food Safety Monitoring	EPSP/CPI/GOBI/ VOCA
2. Implement program and training for efficient use of inedible returns as well as boneless cuts	EPSP/MAME/VOCA
3. Implement new value-added exportable products (fresh/frozen/cooked) minced meats	VOCA/MAME/EPSP
4. Expand Mongolian Experience (Wakamaru) for feed-lot scenarios to extend slaughter time beyond 100 days	VOCA/MAME
5. Develop brokerage plan for meat transactions to increase MAME income.	MAME/EPSP
6. Coordinate implementation of Herder Loan Program	EPSP/GEMP
7. Transportation to south issues ( <i>Truck/Rail/Air brokerage plan</i> ) to increase MAME income	MAME/EPSP
8. Develop program for research and development of dry/semi dry sausages and meat snacks. To include “National Contest Initiative”	EPSP/MAME/ HUNSTECH
9. Initiate Shopper Survey Project for tinned meats and meat snacks	EPSP/MAME
10. Investigate implementation of local auction markets	VOCA/MAME/GOBI
11. Assist in identifying a plan for attracting joint-venture partner for transfer of management skills for traditional exporting to Russia, etc.	EPSP/MAME/VOCA
12. Introduce Herder associations to new forms of organizations	EPSP/VOCA/GOBI
13. Coordinate Academic Volunteers for curriculum building at Mongolia Technical School while visiting for VOCA projects	EPSP/VOCA

**Table B—July 2001 To December 2001**

Activity	Resource Source
1. Implement methodology for collection and dissemination of domestic and international statistics	EPSP/MAME
2. Develop non “me too” incentives to attract more DFI	EPSP/MAME/CIP
3. Develop more training of embassy attaché for marketing	EPSP/CIP
4. Develop program of incentives needed to create focus and stamina to develop non-traditional trade.	EPSP/MAME
5. Implement livestock regional auction—local markets	GOBI/MAME/EPSP
6. Develop business plans for feed-lot scenarios to extend slaughter time beyond 100 days	VOCA/MAME
7. Develop snack-meat marketing plan	MAME/EPSP
8. Centralized Foreign Veterinary Services Coordination plan	MAME/EPSP
9. Transportation Issues Rail car for livestock shipments	MAME/GOBI/EPSP
10. Plan training for updated packaging and marketing options	VOCA/MAME/EPSP
11. Implementation of website communications, marketing and links to slaughterers	VOCA/MAME
12. Develop 3 <sup>rd</sup> phase laboratory information for testing of minerals, pesticides, and hormones as requested by Ministry	MAME/EPSP

## **CONCLUSIONS AND RECOMMENDATIONS:**

- MAME should devise a plan and supervise its execution of a store survey of tinned meat products by designated Mongolian shoppers in major urban areas of “warm climate” targeted economies. MAME should organize this shopper project and supervise the execution, then record the data for demand analysis of potential canners. Tinning of potted meat formulations should be evaluated and have a high priority on the Mongolian research and development (HUNSTECH) agenda.
- Livestock processors should study the trimming of tenderloin operation to correct excessive trimming of head muscle to restrain \$1.50 to \$2.50 losses per animal slaughtered.
- Current market conditions for Russian trading are favorable including the future. Mongolian firms should look for a financially strong, but more importantly, a management knowledgeable foreign joint-venture partner (transfer of both technology and management skills) for expanding beef carcass and boneless sales to traditional trading partner Russia and future China trade.
- Develop appropriate government incentive to the Mongolian meat industry needed to create focus and stamina required to develop trade with non-traditional trading partners using value-added products once Russian trading become commonplace.
- License Wakamaru Co., Japanese feedlot technology, to develop supply of fattened animals to expand slaughter season.
- Test Japanese market for meat snacks using skills of Wakamaru Co.
- Livestock producing industry should study various organization formats (based on evaluation of schemes outlined herein) to identify the type that feasibly can increase Mongolian herder market power in order to increase price efficiency of livestock selling payment.
- Effort should be made to assist the “Mongolian Technical University” to develop curriculum for the following subject matter: Business Management, Marketing Principles, and Principles of Market Economics.
- Direct Foreign Investment (DFI) is a major ingredient for accelerating success in raising productivity, thus increasing Mongolian competitive advantage. Current Mongolia “me too” incentives will not be strong enough to draw in investors away from other economies. Recommend that Mongolian policy makers devise DFI incentives strong enough to overcome the “me too”

phenomena. This can improve the Mongolian business environment as perceived by foreign meat industry investors.

- While traveling around Eastern Europe, the author has seen some other interesting products not yet popular in Mongolia, but successful in other similar economies, such as ground (minced) fresh beef and/or mutton, bulk packed, prepackaged, and vacuumed packed in 500-gram packages, which are sold both fresh and/or frozen at retail. They can be premixed into several levels of lean-to-fat ratios, but the author finds that a 60 percent lean/40 percent fat was the most popular ratio. Another version of a very popular product is a precooked and pre-spiced meat patty. Made from minced meats, it can be spiced in several various flavors. This product is vacuum packaged with 14 patties per package and/or sold bulk in the shops. The shelf life of the vacuum package is about 2 months. The author recommends serious consideration of developing these products, first for domestic, and, once expertise is developed, for exporting to other consumers.
- The success of increasing Mongolian exports is linked to the training of Mongolian trade personnel stationed in Mongolian embassies worldwide. Due to financial constraints, returning to UB for training will be difficult. In order to accelerate the training of Mongolian embassy trade promotion officials, the author suggests the following steps. The Mongolian and American embassy structure should develop a cross-training arrangement in the cities where Mongolia has personnel. American Commercial Attaché could give valuable instruction to the fledgling Mongolian counterparts. Potential Mongolian export products would not be considered as viable competition to USA exporter products.
- Information about laboratory techniques and equipment needs relative to mineral, pesticide, and hormone identification has been requested by Ministry officials. The author suggests a small informational paper be prepared to outline this subject as an extension of the "Component Three Report."
- A valuable technique for creating new and improved meat products in the USA is during state fairs where blue ribbons are awarded to competing products and firms. This process generates a high quality and organoleptic acceptable range of meat products. MAME should try to duplicate this process under Mongolian situation in order to help develop dried and semi-dried product lines.

## **APPENDIX A—PROGRAM FOR RAIL SHIPMENTS OF LIVESTOCK**

Animals are shipped by rail in stockcars which are approximately 10 feet wide and which vary in length from 36 feet to 40 feet. They are constructed to afford maximum ventilation and protection. Cars, which are constructed for the shipment of small stock, sheep/goat and swine, are frequently double-decked. The capacity depends on the length of the car and the size, age and weight of the animals.

Table A-1 indicates the number of cattle, sheep/goat, and hogs of various weights that can be safely transported in 36- and 40-foot single deck stockcars. If double-deck cars are used for sheep/goat or hogs, the number on the upper deck should be 10 to 12 less than on the lower, or the single deck car.

To insure efficient use of stockcars, the railroad should establish minimum weights for carlots. In most cases, they are as follows:

Cattle –	22,000 lbs
Hogs for single deck cars –	16,500 lbs
Hogs for single deck cars –	16,500 lbs
Hogs in double-deck cars –	23,000 lbs
Sheep/Goat in single deck cars –	12,000 lbs
Sheep/Goat in double-deck cars –	22,000 lbs

Some regions may require a pick-up service wherein the railroad routes cars throughout a number of smaller regions. At each stop a few head are picked up, until at the end of the route every car is filled to capacity. Such pickup can be scheduled twice a week during the slaughtering season. Some specially constructed stock cars can be provided with equipment for feeding and watering the animals' en-route. However, these cars are usually provided for shipment of special animals, i.e., show animals and breeder animals, etc.

**TABLE A-1—SAFE-LOADING CAPACITY FOR 36 AND 40-FOOT STOCKCARS**

CATTLE									
AVERAGE WEIGHT (LBS)	300	400	500	600	700	800	900	1000	1200
NUMBER IN 36FT CAR	60	50	42	37	33	30	22	25	23
NUMBER IN 40FT CAR	67	56	46	40	37	33	30	27	25

### HOGS

AVERAGE WEIGHT (LBS)	100	125	150	175	200	225	250	275	300
NUMBER IN 36FT CAR	130	115	100	89	79	73	68	62	59
NUMBER IN 40FT CAR	145	127	110	98	88	82	76	69	65

### SHEEP/GOATS

AVERAGE WEIGHT (LBS)	50	75	100	125	150	180
NUMBER IN 36FT CAR	155	125	105	96	85	75
NUMBER IN 40FT CAR	170	138	116	104	94	83

## **APPENDIX B—THE BASICS OF AUCTION MARKET OPERATION**

An auction market is where bidding is done by "public outcry" and terms of the transaction are known to everyone in attendance. This is in contrast to business by "private treaty" which simply means that price is arrived at by buyer and seller bargaining in privacy—the outcome (price or other terms of the transaction) is only known to the participants.

### **Operational Features:**

A herder would consign his livestock to the cooperative agent at the pooling location. However, it would be good business practice for a herder with large amounts of livestock to contact the cooperative agent several days before and notify him of intentions to deliver. It is a common practice for auction managers to visit patrons (farmers) on request, inspect their livestock, and advise the patron regarding that inspection, market conditions, and probable value of the livestock.

Upon delivery, the livestock are penned or marked in a way to maintain identity of each individual owner. Auction operators usually follow a consistent order in sales by species. That is hogs may be sold first, followed by sheep and then cattle. The cooperative agent on-site would sort and shape up lots that in his judgment would enhance the sale. The skill and expertise of a cooperative agent is in knowing when he has the best possible offer for a pen of livestock on that particular day. If he is unable to obtain a reasonable offer, he may hold the livestock over for the following day's market, but this involves risk and some expense and is not common operating procedure. In most cases, the cooperative agent provides the starting price for livestock.

The price discovery in auction markets is by public bidding (practically all auctions in the U.S. have adopted ascending, or English, bidding) in response to auctioneer's chant. The other method is opposite, in that bidding is declining from the starting bid—Dutch bidding. The starter attempts to put the initial price just slightly below what he thinks the livestock will go for. To the extent he is able to judge this value, his ploy obviates the necessity of needless bidding. Following the auctioneer's chant, bidding progresses to higher levels until no one is willing to advance the last offer, and livestock is sold to the highest bidder. Depending on local custom and/or class of livestock involved, the selling may be done on a per-head basis or by weight.

Upon completion of sale, the livestock are weighed and delivered to the pens of the buyer, or holding pens, pending shipping instructions. Title of ownership passes to the buyer upon the weighing.

Details of the transaction (price, weight, and the name of the buyer) are transmitted to the cooperative's office. An "account of sale" is prepared for the shipper giving this information and calculation of gross proceeds, itemized charges, and net proceeds. This, along with a check for the net proceeds, is

transmitted to the shipper. Itemized charges include the trucking charge (which is forwarded directly to the trucker); commission charges, which are retained by the cooperative for its selling service; a small deduction per head, which is transmitted to the Polish National Livestock and Meat Promotion Agency and used for industry promotional purposes; a small fee for use by the pooling yard for feed and insurance. Some pooling yards assess a small "ring fee" to cover bonding, which helps insure a shipper that he will receive payment.

### **Alternative Weighing Procedures:**

Several different procedures are followed in obtaining sale weight. Many modern auctions are constructed so that the scale platform acts as the sale ring. In addition, many have circuitry to an electronic display that exhibits total weight, number of head, and average weight in full view of the audience. Some markets, however, locate the scales on the "in" side of the sale ring, and livestock are weighed before entering the ring. In this case, the weight can be announced or flashed on a lighted sign. This eliminates the need for buyer to estimate weight. It is not uncommon, however, for the scales to be located on the "out" side, the cooperative agent to "catch" the weight of a draft of animals or a part of a draft prior to final sale so that bidders will have an estimate of average weight while bidding. In this case, however, the official weight is taken after the sale. At some markets, weights are taken, as livestock is unloaded at delivery to the pooling site, although this is not common practice.

### **Alternative Pricing Procedures:**

U.S. regulators allow auction operators to purchase livestock that otherwise would sell at a price below what would be considered a competitively established level for that particular class, grade, and weight of animal at that time. This practice, known as "market support," is designed to provide a degree of price protection to sellers at times when buying activity is slack. Other means of price protection are also available to consignors:

- One method is to set up a reservation price with the auction operator before sale; this price may be noted on the ticket accompanying the livestock into the sale ring. A reservation price means that if bids do not reach that price the livestock are not sold.
- Another method is for the consignor to declare 'no sale' at the time the auctioneer has received the last bid. However, this necessitates the consignor or his representative being present during the sale.
- A third alternative--one definitely frowned upon--is for the consignor to bid on his own livestock or arrange for a cohort to do so. This is known as "by-bidding."



## **Innovative Auction Markets**

Another innovation in livestock marketing is auctioning slaughtered animals on a carcass basis. This custom is done only on a limited basis at this time in the U.S. but has been more accepted in Ontario, Canada. Bidding proceeds on an agreed-upon base grade. After the animals have been slaughtered, price differentials are applied to the extent that quality, yield, and other pre-agreed product standard attributes deviate from the base.

Additionally, a modernization in auction marketing is the electronic auction. Telephone auctions, commonly known as Tel-O-Auctions or Tele-Auctions have been in use for many years in the U.S. and other countries. These represent a simple form of electronic marketing and consist of an interlocking system of telephone conference-call set-ups whereby, as in other forms of electronic markets, traders in geographically separated locations can bid on livestock as described over the system. The livestock may be assembled at selected points or left on the producer's farm. Sorting and grading must be very precise because buyers are bidding on description—sight unseen. They must therefore have confidence in the grading system. However, this methodology could work nicely when the purchase will be based on a slaughtered carcass basis (as described above) and seeing the livestock in advance is meaningless. An alternative version of this process is called Teletype Auctions. Teletype auctions are similar to telephone auctions except that each buyer has direct communication through a Teletype buying machine connected to a central computer instead of through voice communication with an auctioneer. Typically, a Dutch (regressive) auction method is used. Livestock may be assembled at a certain location prior to sale. Selling is by description, and the computer acts as the auctioneer, with automatic selling tape changing the price at pre-specific time intervals.

Another further advancement of this process is the use of a video screen so those prospective buyers can view the livestock. In contrast to telephone auctions where the livestock is assembled at a particular place and buyers may be widely separated, use of video requires that the buyers assemble while the livestock may be left at widely separated farms.

### **Basic Criteria for Physical Facilities:**

1. The holding pens must be organized (animals conclusively tagged) to hold the different species of animals in several categories:
  - A. Clearly marked from the original farmer's delivery
  - B. The pooled grouping made by the cooperative agent for improving sale price (this may be done for each farmer's group or the agent must weigh each farmer's animals before mixing and the farmers receive the pooled price times the portion of the group weight of his animals)
  - C. The holding group for each buyer's account after the auction sale before shipment occurs

2. Facilities must be available for watering and feeding any animals left for more than several hours.
3. Telephone or other communication devices must be available so the completed transactions and all the appropriate information associated with the sale can be communicated immediately back to the main cooperative office.
4. The arena facilities should be so designed that there is a clear view between auctioneer and the potential buyers. Many buyers prefer not to display any clear signal as to when they are bidding. Many prefer to use undetectable signals only known to the auctioneer, e.g., touching one's ear, scratching one's head or any other prearranged signal that is not easily detected by the other buyers in the arena. Therefore, a clear view between the auctioneer and the buyers is needed, for example the auctioneer may be on a raised platform or the reverse, in that the buyers could be on a raised platform—either way would do the trick.
5. Important also is the audible level of the activity. It is important that everyone can hear what is going on; therefore microphones or any other amplifying devices may be needed.
6. The level of lighting may also be an important factor, as buyers must get a clear view of the animals that they are considering to bid on. Dark or crowded facilities would not lend themselves to clear and undistorted viewing by potential buyers.
7. A clearly visible and usually understood identification system will be needed—one system that works well and can be used by both computer and man. This is a scheme wherein we use the first letter of the farmer's last name or the first letter of the company name plus some part of or the whole of their phone number. For example, let's say farmer Mr. Stefan Bentkowski's phone number is 221-29; then his individual identification code would be B221 or B22129. For a firm, the process is the same—Gzwagiu Meat Company, whose telephone is 234-09, and then their special identification code would be G234 or G23409. Using this methodology should result in very few duplication possibilities.
8. It is advisable that all documentation be forwarded to the main office where the final billings and other manipulation of data will be handled by qualified individuals, as they may not always be available.

## **APPENDIX C—CIRCUMSTANCES FOR SMOKED DRIED MEAT SNACKS**

Meat snacks, i.e., jerky (comes in four flavors—Original, Mesquite, Teriyaki, and Peppered) certainly have come a long way, from being a staple of the saddlebag to becoming a value-added meat product. Thanks to new formulas and optimized processing techniques, hard-to-eat protein chips have now become soft and chewy morsels that are enjoyable to eat. The modern versions don't require pounding and boiling by the consumer prior to eating.

**Meat snacks** may well be one of the oldest types of snack food. After all, their fundamental processes—salting and drying—date back at least as far as the Middle Ages, possibly earlier. Those early versions have been described as looking like strips of thick cardboard and being just about as easy to chew. Fortunately for the jaws of today's consumer, meat snacks have evolved into a wide variety of much more palatable forms, thanks to newer formulations and process optimizations.

### **Renewing interest**

Data from the Snack Food Association<sup>9</sup> (SFA), Alexandria, Virginia, show that meat-snack sales have been on the rise for the last six years. In fact, the category enjoyed double-digit growth from 1993 to 1999. In 1999, meat snack sales increased by almost 30 percent (28.5 percent to be exact). Total sales were \$1.3 billion! Volume sales were up 27.2 percent to \$.962 billion. (Pork Rinds are not included in this data.)

Meat-snack popularity can be confirmed by taking a look inside a typical convenience store. Some may have one entire side of an aisle devoted to the various products. This should come as no surprise, since convenience stores were the highest selling channel, selling 45.3 percent of all meat snacks sold, according to SFA. The association attributes this recent comeback primarily to increased consumer awareness that meat snacks are low in fat. Many meat snacks are now marketed with "fat free" slogans, but in fact; most have been low in fat since their early development.

Meat snacks fall into two general categories: those made from sliced, whole meat and those formulated from comminute meat. The beginnings of each type can be traced back to traditional ***charqui*** and ***pemmican***.

**Charqui**—from which the word "jerky" is derived—most likely evolved in Peru as a way of preserving game from a hunt. Early peoples eventually switched to beef

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<sup>9</sup> Timothy C. McCook, Manager of Communications, Snack Food Association, 1711 King Street, Suite One Alexandria, Virginia 22314, 703-836-4500, ext.205

when cattle became domesticated. To make charqui, boned and defatted meat was first sliced to about a quarter-inch thickness. These slices were then dipped in brine or rubbed with salt and rolled up in animal hides for 10 to 12 hours. This ensured that the meat absorbed the salt and released some of its juices. Finally, the strips were hung in the sun to dry and then were tied into bundles.

**Pemmican** started out with thinly sliced, dried, lean meat. These strips were shredded by pounding and then mixed one-to-one with melted fat. To this was added marrow from the animal bones and wild cherries or cranberries (depending on the location). The finished mass was packed into a rawhide sack, which was then sewn and sealed with tallow.

### **Meat Snacks Modernized**

Today, jerky is still often made from whole slices of meat. This process is expensive because of the labor-intensive nature of slicing and laying out the meat. Aficionados do, however, consider the resulting jerky a premium product because of the texture. The slices are dipped, sprayed or tumbled with a marinade, then smoked and/or dried. Several ACDI/VOCA volunteers have held information seminars and helped produce samples in Ulanbator in 2000.

"Slicing is not used too much by the big manufacturers because it's too expensive," says Nora Piento, senior food technologist, Heller Seasonings, Bedford Park, Illinois. "Most of it is chunked and formed, but not to the point of being emulsified as in hot dog production."

More often, jerky is formed from comminuted meat. The meat is first put into an emulsifying blender along with the dry ingredients and any required water. The resulting mass may then pass through a sheeter or extruder to be formed into strips, or into a stuffer to be put into casings. Finally, the pieces are smoked and/or dried as in traditional production methods.

Comminuted jerky and meat-based snack sticks are made through similar processes. About the only real differences are the shape into which each is formed and the final moisture level to which each is dried.

### **All Dried Up**

Drying meat snacks requires some tradeoffs. Flavor and a chewy texture are important to good jerky and meat snacks. Higher moisture levels give both higher product yields and a desirable soft, chewy texture. The higher the moisture content, however, the more prone the product will be to color fading and microbial growth. For the right combination of preservation and organoleptic enjoyment, meat snacks follow the principles that ***guide the development of intermediate moisture foods (IMFs)***.

IMFs achieve a delicate balance—moist enough to be soft and palatable, yet dry enough to be shelf stable<sup>10</sup>. Formulation and processing minimize the degradative effects of the higher moisture content and maintain long-term shelf stability.

In meat snacks, the proper moisture level is obtained mainly by traditional drying methods. Although faster than leaving them out in the sun, the commercial drying of meat snacks is a time-consuming process that must be skillfully engineered. Even for a relatively small 12-mm diameter snack stick, it can take a good 24 hours of non-heated air-drying to achieve this moisture reduction. Smokehouses often are used, but tunnel dryers also are effective.

"We just put it in the smokehouse initially heated to about 140° to 180°F," says Romeo Toledo, Ph.D., professor of food science, University of Georgia, Athens. "We stop the heat when the product's internal temperature is 168°F, which usually takes about two and a half hours; then we just let it go until the product dries."

The thinner the piece, the more surface area, and the faster it will dry. "When we make regular jerky from muscle strips, we cut it about one-eighth of an inch thick. When we dry it, the process lasts for about four hours," says Toledo. "A very thin profile would definitely cut down the process time."

In addition to reaching the desired moisture level through drying, the product also must be designed with a specific pH and water activity to counteract the higher moisture levels that increase palatability. Most contemporary meat snacks have moisture content close to about 5 percent, but some of the newer "chewy steak" products may have more. Water activities generally range from about 0.6 to 0.8. For all meat snacks, the pH is around 3.5 and usually no higher than 4.0.

## Ingredient Index

The ultimate pH and water activity of a meat snack result from the drying process, combined with creative formulation. In general, ingredients other than the meat will be added via the marinade to whole-muscle products or blended with the meat for comminuted products.

- **Meat.** For whole-muscle products, lean skeletal meat such as beef round is usually the ingredient of choice. "You have to have lean meat that has no tendons," says Toledo. "Because the fat will leave stripes on the jerky, trimming must be more involved."

One of the most important properties of the meat used in comminuted products is its binding characteristics. Without adequate protein-to-protein interaction, the pieces won't hold together to produce the desired texture, nor will they stabilize

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<sup>10</sup> This means that product does not need refrigeration and can be stored at room temperatures

the fat and bind moisture. Consequently, most of the meat used also should be lean skeletal muscle, since this has a higher quantity of the necessary proteins.

However, to reduce costs, comminuted products can, and often do, contain trimmings and fat. In the higher-moisture meat snacks, fat contributes to a softer, moister texture. In addition, fat helps the meat to bind. In some meat snacks, in fact, reducing fat requires adding binders such as soy or dairy proteins.

- **Salt** has three functions in meat snacks. First, it contributes flavor. Next, in comminuted products, salt solubilizes salt-soluble proteins to achieve proper binding. Third, salt extends shelf life by contributing solids that lower water activity and inhibit microbial growth.

Typically, the optimum salt level still boils down to taste. Usually about 6% in the dried product is optimum. This means that the salt level initially may only need to be about 2% prior to drying due to the concentration effects of moisture loss. In most other products, such high salt levels would be unpalatable, but over the years, this has simply become the standard that consumers expect.

- **Sweeteners** often are used because their taste helps mellow the strong bite of the high salt levels. They also can increase solids, helping control water activity at higher moisture levels. This gives the product a softer chew compared with the hard jerky of the past.

Many sweeteners also have humectant properties that help the product retain a soft texture over its shelf life. Monosaccharides have the greatest potential for lowering water activity. Using higher dextrose equivalent (DE) corn sweeteners, therefore, will have a greater water-activity-lowering effect.

For fermented products, added sugars are necessary as food for the bacteria in the starter culture. Since these must be fermentable sugars, monosaccharides, such as those found in corn sweeteners, should be used. Again in this case, the advantage goes to the higher DE corn sweeteners, which contain more monosaccharides.

- **Acidulants** lower pH, helping to preserve the product. Most often the acidulant of choice is either acetic or citric acid. Because the acid might interfere with salt's function in protein binding, product formulators may want to choose an encapsulated acidulant.
- **Starter Culture.** Instead of adding acidulants to the formula, some products are allowed to ferment with lactic acid bacteria to obtain the proper pH. This ensures shelf life and contributes flavor.

Lactic acid bacteria are used in snack-stick production in much the same way as in summer-sausage production. In fact, most meat sticks are made much like summer sausage, except they're dried to a lower moisture level.

- **Seasonings** give meat snacks a unique flavor profile that identifies them as the creation of their manufacturer. The seasonings, therefore, depend on the goals of the project and on the formulator's creativity. Consumers do, however, expect to experience certain flavors.

In general, onion, garlic, black pepper, and red pepper are pretty standard. Then each manufacturer will add other seasonings to make their product unique. As is the case with sausage processing, many meat-snack manufacturers rely on suppliers to provide an all-in-one blend of their own custom seasoning combination. "It's easier for them to add one bag of seasoning to a batch that contains everything.

- **Liquid flavors** also can be used. They might be added to the marinade, to the meat emulsion, or plated onto dry ingredients and blended with the seasonings.
- **Preservatives.** Between the drying and salt content, most meat snacks already are well preserved. Some snack sticks may contain nitrites, but it's often for the cured color and flavor they generate and not as a shelf-life requirement. Some products, like the newer "beef steak" jerky, have a softer texture created by increasing the moisture and/or water-activity levels. These often may contain a preservative such as sodium benzoate to assure microbial stability.

## Processing Matters

A meat snack's processing directly affects the finished product's quality. If, for example, a comminuted product is too finely ground, the emulsion may break, causing the product to be gritty. Another possibility is for the mass to become so tightly bound that the finished jerky or snack is chewy and tough. On the other hand, the meat can be ground too coarsely, preventing it from binding.

Temperature during mixing also must be monitored to assure proper binding. The optimum is to keep the product at 30°F during mixing and forming. "If it gets too warm, you won't get the bind that you need or the emulsion will break," says Piento. "On the other hand, I've actually seen somebody freeze up their mixer with product that is too cool."

Controlling the temperature typically doesn't require investing in jacketed equipment. Since most products contain a small amount of water, some of this may be replaced with ice to keep the temperature down.

Cutting whole-muscle jerky must be done carefully, with as little mechanical action as possible. Otherwise the meat can become tattered and break apart. Even the way the marinade is added can affect product quality. "If you tumble the meat, you have to be very gentle," says Toledo. "Most companies choose to soak it; that way you don't run the risk of breaking the pieces up."

While drying, temperature control again becomes critical. If temperature is too high, it can affect the appearance and eating quality of both whole-muscle and comminuted products. "If it's too high, you cook the pieces too fast," says Toledo. "When protein is dried after it's cooked, it looks terrible. It looks gray and doesn't get that nice mahogany color. It won't have a nice gloss."

For comminuted products in particular, the initial cooking stages take place while the product is rather soft. If the temperature gets too high, the fat tends to separate out, yielding a messy product with an oily coating on the outside. Slow drying also is required to obtain the proper eating texture. Crumbliness can be avoided by drying the product while the protein is still raw. This must be balanced with other concerns, however. "Ideally, you dry it slow," says Toledo. "But the faster you dry it without raising the temperature too much, the better off you'll be."

Typical drying temperatures will be around 130°F. "In our smokehouse we start at 140°F and take it up every 30 minutes or so—primarily for microbial control—then we drop the temperature just to dry it out," says Toledo.

Once dried, the product is packaged for distribution. With modern jerky and meat snacks, the package plays an important role in maintaining product quality throughout the shelf life. One of the main problems is moisture pick-up from the atmosphere. This can change both the color and the texture of meat snacks. First and foremost, the packaging materials and the seal must provide an effective moisture barrier. For larger foodservice packages that will be opened and closed frequently, a humectant packet might be added or incorporated into the lid to help fight moisture pick-up.

Finally, a degree of oxygen protection is helpful to guard fats from oxidative rancidity. This does, however, depend on just how long the shelf life needs to be. Since many of these products are smoked and/or contain antioxidants of some sort, oxidation already is being retarded to a certain degree.

*Source: January 1999 -- Applications By: Scott Hegenbart Contributing Editor*



## **APPENDIX D—FINANCIAL PROGRAM FOR LIVESTOCK HERDER LOANS**

Recognizing a deficiency of formal sector lending in rural areas in Mongolia, GOVIIN EKHLEL was established to fill this gap and set an example of transparent and efficient banking operations for the industry.

### **Background**

This institution is a non-bank financial organization in compliance with Mongolian Laws. Fulfilling the financial needs of aimag-centered businesses in the Gobi, however expanding to supply short-term loans to livestock-herders. The operation is headquartered in Ulaanbaatar with branches in aimag centers. This is wholly owned by Mercy Corps International with start-up financing provided by USAID and U.S. Embassy.

### **The Current Aim Of Goviin Ekhlel**

- ✓ To meet the working capital and fixed asset needs of creditworthy businesses in the GOBI aimag.
- ✓ To initiate and to expand pricing flexibility to livestock producers by offering small herder loans starting by end of year-2000.
- ✓ To assist businesses by providing a reliable source of credit services for all borrowing needs. Educating borrowers by making learning part of the lending process

### **Locations**

Datanzadgad and additional opening during year-2000 as follows

Mandalgovi – Altai – Arvaikheer

For the new program of herder loans the areas of trade are still under consideration: Dundgovi aimag, Umnugovi aimag and several soon to be determined.

### **Loan Sizes**

#### **First Time Borrowers**

Loan size of 1 million to 5 million Tugriks – Interest rate will be market based and competitive – loan period of between 3 to 12 months. For herder loans it is anticipated for repayment to be within nine months or within one operating business cycle, whichever comes first. It is anticipated that repayment of principal and interest will be lump payment

### Herders

Have a minimum herd size of (to be determined) animals. Have records demonstrating ownership that are registered with the soum government. Brand or ear-tag their animals.

### Herder Cooperatives

Similar to above requirements but final rules have not been determined yet.

### Established Customers:

Customers who establish a satisfactory credit history may be eligible for larger amounts and more flexible interest rates and repayment terms.

### **Requirements for Applying:**

Participation in one of their **marketing meetings**. Submission of loan application and required attachments and proof that the potential borrower resides and conducts its principal business activities in the aimag center (this requirement may be adjusted for herders). For herders' special applications have been designed to include:

Herder Loan Application      Herder Balance Sheet Form      Cash Flow Worksheet

Will only lend to **experienced herders** with demonstrated herd-management capabilities.

All loan applications require balance sheets and income statements or cash flow projections that show a margin between income and expenses sufficient to repay the loan from normal herd operations. Additionally, there must be adequate secondary sources to repay the loan.

The **herder family or herder cooperative** must maintain adequate production and financial records to demonstrate historical performance.

### **Site Visit Requirements**

- Condition of livestock and equipment
- Personal living habits of the herder family
- Stability of relationship between family
- Health and age of loan applicant
- Farm record development
- Access management abilities of herder group

## **Unacceptable Uses for Loan Proceeds**

- Loans to acquire or develop pesticides;
- Loans to develop or maintain water sources;

## **Uses for Loan Proceeds**

- Herd maintenance costs; costs of supplemental fodder; veterinary services, kidding;
- Cost associated with fiber (cashmere combing/de-hairing) or meat/skin/hide (slaughter) production;
- Labor costs;
- Herder living expenses ???;
- Repairs;
- Small capital purchases;
- Working Capital for income generating activities that supplement herding income (e.g., non-herder employment or cottage activities using animal by-products);

## **Rules for Collateral and Lien Recording**

- Security agreements shall adequately describe collateral with appropriate legal descriptions, brands, ear-tags, if equipment the manufacturer serial numbers and type;
- Source and dates of valuations (lower of cost or market);
- Collateral margins (loan-to-value limits) to be determined
- Collateral ownership verification
- Acceptable collateral to be determined
- Livestock and equipment liens are to be perfected by filing copies of loan agreement and security agreement with notary office and governor office in soum.
- Herders will be encouraged to insure<sup>11</sup> the herds against natural disasters with GOVIIN EKHLEL named as loss payee

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<sup>11</sup> Insurance is available from Mongol Daatgal for 3% if 100% of the value of the herd is insured and 6% if 50% of the value is insured.

### **Rules for Maintenance of Credit Files**

- Each borrowers credit file shall be reliable, complete, current, and well organized;
- Shall document the loan relationship thoroughly enough so that credit decision can be recommended from the credit file independently;
- Credit files shall explicitly record the purpose of the loan, its expected source of repayment, and any secondary sources of repayment;
- Documents needed to access the borrowers character, financial condition, management capabilities, and collateral shall be organized (to be determined)